

4900  
Work Order ID 105447

August-06-13 11:00:34 AM

\*105447\*

Page 1

Item ID: D3688-7

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: STUD

Start Date: 8/06/13 Start Qty: 10.00

\*10\*

Cust Item ID:

Required Date: 8/20/13 Req'd Qty: 10.00

\*10\*

Customer:

Reference:

Approvals: Process Plan: MCS Date: 13-08-06

Tooling:

Date:

Run Start \*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
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D3688	Rev D
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100		0.00
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\*100\*

BAND SAW

Bandsaw

Memo

0.00

Jeaspa Bandsaw

\*\*\*DO NOT USE CHOP SAW\*\*\*

Cut blank 9.724" long

DAS  
40  
9-83

13/10/25

10

Ø

110		0.00
-----	--	------

\*110\*

DOOSAN LATHE

Doosan

Memo

0.00

Doosan Lathe

1-Turn as per Folio FA729 Rev: \_\_\_\_\_ & Dwg D3688 Rev: \_\_\_\_\_ 2-Deburr  
per dwg D3688  
3-Check .625" bore with DT9530 GO/NO GO Gauge

13-10-31

10

Ø

160		0.00
-----	--	------

\*160\*

QC2- Inspect parts off machine FAI/FAIB

QC

Memo

0.00

Quality Control

13-10-31

10

Ø

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____  Part No. _____  NCR No. _____	<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>	<b>AGAINST DEPARTMENT/PROCESS</b>  <table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
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Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>																

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data									
Equip/Tooling									
Operator									
Material									
Setup									
Other									
Process									
Supplier									
Training									
Unapproved									

**FAULT CATEGORY**

Landing Gear	General	Other
<input type="checkbox"/> Bending	<input type="checkbox"/> Bend	<input type="checkbox"/> Grain
<input type="checkbox"/> Centre Not Concentric to O/S	<input type="checkbox"/> BOM/Route	<input type="checkbox"/> Hardware
<input type="checkbox"/> Cracks	<input type="checkbox"/> Broken/Damaged	<input type="checkbox"/> Inspection Incomplete
<input type="checkbox"/> Crushed/Crimped	<input type="checkbox"/> Burrs	<input type="checkbox"/> Instructions Incomplete/Unclear
<input type="checkbox"/> Cuffs	<input type="checkbox"/> Contamination	<input type="checkbox"/> Maintenance
<input type="checkbox"/> Heat Treat	<input type="checkbox"/> Countersink	<input type="checkbox"/> Misabeled
<input type="checkbox"/> Inspection Strip in Tube	<input type="checkbox"/> Cut Too Short	<input type="checkbox"/> Misread
<input type="checkbox"/> Ripples in Bend	<input type="checkbox"/> Drill Holes	<input type="checkbox"/> Offset
<input type="checkbox"/> Torque Waves in Extrusion	<input type="checkbox"/> Drawing	<input type="checkbox"/> Out of Calibration
<input type="checkbox"/> Turning Sequence	<input type="checkbox"/> Finish	<input type="checkbox"/> Out of Sequence
<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Folio	<input type="checkbox"/> Outside Dimensions
		<input type="checkbox"/> Ovalized
		<input type="checkbox"/> Over/Under tolerance
		<input type="checkbox"/> Part Incorrect
		<input type="checkbox"/> Part Lost/Missing
		<input type="checkbox"/> Part Moved
		<input type="checkbox"/> Positioned Wrong
		<input type="checkbox"/> Power Loss/Surge
		<input type="checkbox"/> Pressure/Forced
		<input type="checkbox"/> Temperature/Cure
		<input type="checkbox"/> Weld
		<input type="checkbox"/> Wrong Stock Pulled
		<input type="checkbox"/> Other

# Work Order ID 105447

\*105447\*

Page 2

Item ID: D3688-7

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: STUD

Start Date: 8/06/13 Start Qty: 10.00

\*10\*

Cust Item ID:

Required Date: 8/20/13 Req'd Qty: 10.00

\*10\*

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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170 QC8- Inspect parts - second check

0.00

OK B/11/01

\*170\*

QC

Memo

0.00

Quality Control

100% CHECK,CHECK ALL DIMENSIONS AND THREAD FIT

10

180

0.00

\*180\*

Purchasing

PURCHASING

Memo

0.00

Purchasing

Issue P/O: 21994 LPI Per ASTM 1417 LEVEL

2Certificate of conformaty is required

OK 13/11/08 (10)

190

0.00

\*190\*

Packaging

Receive & Inspect for Damage & Mat'l Certs

Memo

0.00

Packaging

Ensure certificate of conformity is attached

13/11/08 (10)

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____  Part No. _____  NCR No. _____	<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>	<b>AGAINST DEPARTMENT/PROCESS</b>  <table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
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Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>																

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data <input type="checkbox"/>									
Equip/Tooling <input type="checkbox"/>									
Operator <input type="checkbox"/>									
Material <input type="checkbox"/>									
Setup <input type="checkbox"/>									
Other <input type="checkbox"/>									
Process <input type="checkbox"/>									
Supplier <input type="checkbox"/>									
Training <input type="checkbox"/>									
Unapproved <input type="checkbox"/>									

**FAULT CATEGORY**

<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions
		<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge
		<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other

August-06-13 11:00:34 AM

Item ID: D3688-7

**Accept**

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

**Item Name:** STUD.

**Start Date:** 8/06/13      **Start Qty:** 10.00

\*10\*

**Cust Item ID:**

**Required Date:** 8/20/13      **Req'd Qty:** 10.00

**\*10\***

**Customer:**

**Reference:**

**Approvals:**      **Process Plan:** \_\_\_\_\_ **Date:** \_\_\_\_\_ **Tooling:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Run Start \*NR1\*

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop \*NR2\*

[illegible]

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

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Doc/Data									
Equip/Tooling									
Operator									
Material									
Setup									
Other									
Process									
Supplier									
Training									
Unapproved									

**FAULT CATEGORY**

Landing Gear	General	Other
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		<input type="checkbox"/> Temperature/Cure
		<input type="checkbox"/> Weld
		<input type="checkbox"/> Wrong Stock Pulled
		<input type="checkbox"/> Other

# Picklist Print

August-06-13 11:00:40 AM

Page 1  
T

Work Order ID: 105447

\*105447\*

Parent Item: D3688-7

\*D3688-7\*

Parent Item Name: STUD

Start Date: 8/06/13

Required Date: 8/20/13

Start Qty: 10.00

Required Qty: 10.00

## Comments:

Rev:A New Issue 08-01-29 JLM Verified By:EC  
IPP Rev:B Material Change 09-01-07 JLM Verified By:EC  
IPP Rev:C Added note on Step 2 09-01-26 JLM Verified By:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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M174PH-H900R1.000

Purchased

No

100

f

27.1180

1.0871

11.44316

**\*M174PH-H900R1 000\***

\*\*

DAS  
40  
9-25

13/10/25

17-4SS H900 ROUND BAR 1.00

## Location

## Loc Qty

## Loc Code

MAT030

27.118

117445

2.46

120767

10.124

121280

1.8

121918

12.326

122577

0.408

→ 126952

10.0

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Operator									
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Setup									
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Process									
Supplier									
Training									
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**FAULT CATEGORY**

Landing Gear	General	Other
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		<input type="checkbox"/> Temperature/Cure
		<input type="checkbox"/> Weld
		<input type="checkbox"/> Wrong Stock Pulled
		<input type="checkbox"/> Other



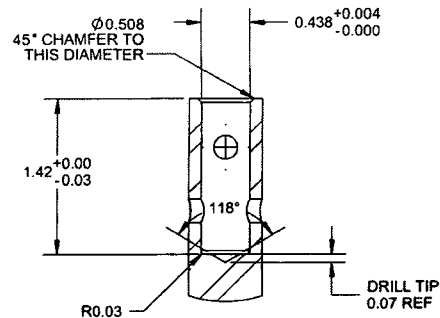
<b>DART AEROSPACE LTD</b>		<b>Work Order:</b> 105447
<b>Description:</b> Stud		<b>Part Number:</b> D3688-7
<b>Inspection Dwg:</b> D3688	<b>Rev:</b> D	<b>Page 1 of 1</b>

### FIRST ARTICLE INSPECTION CHECKLIST

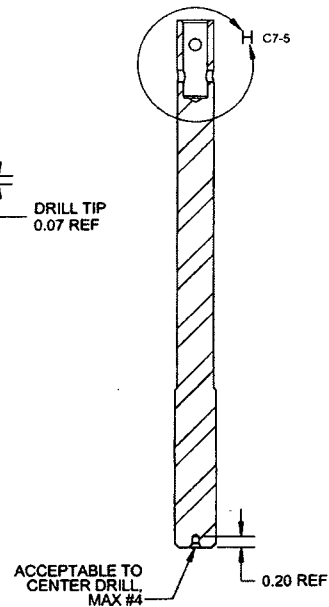
Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Ø0.508	+/-0.010	.510	/			
0.438	+0.004/-0.000	.439	/			
1.42	+0.000/-0.03	1.410	/			
<del>1.18</del>	0.5°					
R0.03	+/-0.030	R.03	/			
<del>0.07 Ref</del>	<del>+/-0.030</del>					
90°	0.5°	90°	/			
<del>Ø0.189</del>	<del>+0.005/-0.001</del>	.216	/			
1.025	+0.000/-0.010	1.018	/			
Ø0.659	+0.000/-0.015	.658	/			
9.624	+/-0.015	9.627	/			
2.90	+/-0.030	2.90	/			
3/4-16UNF-2A	N/A		/			
0.075 x 45°	+/-0.010 x 0.5°	.075 x 45°	/			
0.445	+0.000/-0.010	.438	/			
Ø0.216	+0.005/-0.001	.216	/			

<b>Measured by:</b> <i>[Signature]</i>	<b>Audited by:</b> <i>[Signature]</i>	<b>Preliminary Approval:</b>
<b>Date:</b> 13-10-27	<b>Date:</b> 13/11/01	<b>Date:</b>

Rev	Date	Change	Revised by	Approved
A	09.05.11	New Issue	KJ	
B	09.11.04	Dwg Rev updated	KJ	
C	13.02.27	Ø0.216 was Ø0.189	KJ	<i>[Signature]</i>



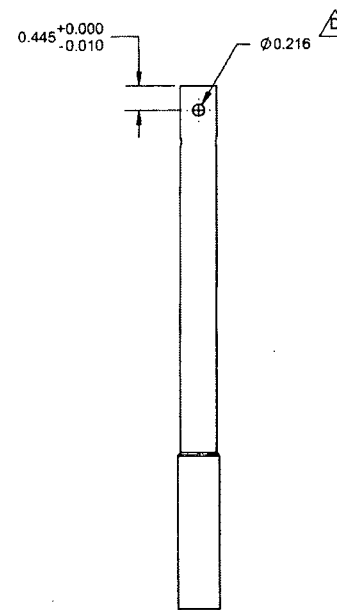
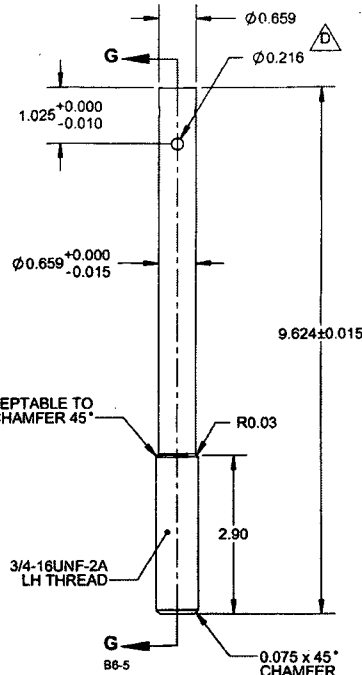
**DETAIL H** D6-5  
SCALE 2X



**SECTION G-G** B4-5

**D3688-7 STUD**

- NOTES:**
- 1) MATERIAL: 17-4PH STAINLESS STEEL ROUND BAR PER AMS 5643 H-900 CONDITION
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: NONE
  - 7) WEIGHT: 0.96 lb
  - 8) LPI PER QSI 038 4.1.1 (ASTM E1417 LEVEL 2)



105447 MJS  
1308-06

**RELEASED**  
2013-01-22

DESIGN	RF	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	DB		
CHECKED	MB	DRAWING NO.	REV. D
MFG. APPR.	JLM	D3688	SHEET 5 OF 5
APPROVED		TITLE	SCALE
DE APPR.		STUD	NTS
DATE	12.12.05	COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



## LIQUID PENETRANT TEST REPORT

P- 12255

CLIENT Dart Aerospace DATE NOV 7 2013 PAGE 1 OF 1  
ATTENTION Ghentale, Linda, Andy ACUREN JOB NO. 188-B-C0893 TIME AM ☐ PM ☒  
ADDRESS 1270 Aberdeen PO/VO No. 21994  
Hewkasbury, on WORK LOCATION As Address  
PROJECT Pt-wet Fluorescent Liquid penetrant Inspection ACCEPTANCE STD. ASTM 1417/1418 REV./DATE 2005  
ITEM(S) EXAMINED - see below

JOB DESCRIPTION PROCEDURE No. LT-002 REV./DATE 2009 TECHNIQUE No. LT-002 REV./DATE 2009  
PART NO. MATERIAL Aluminium THICKNESS  
SCOPE Performed a wet flow L.P.I on 100% of the external surface only on item  
performed below

## TEST DETAILS

METHOD ☒ FLUORESCENT ☐ VISIBLE ☒ WATER WASH ☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED  
FAMILY BRAND Magnaflux BLACK LIGHT S/N 3790 ☐ OUTPUT > 1000  $\mu$ W/cm<sup>2</sup> ☐ AMBIENT < 2 fc  
PENETRANT 2L-67 MINIMUM DWELL TIME 15 MIN. LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT > 100 fc @ SURFACE  
PENETRANT REMOVER H2O MINIMUM DRY TIME > 10 MIN. OTHER  
DEVELOPER SKD S2 MINIMUM DWELL TIME 30 MIN. LIGHT METER S/N 1098866 CAL DUE DATE 11/20/2013  
DEVELOPER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY

## TEST SURFACE

SURFACE CONDITION ☐ AS GROUND ☐ AS WELDED ☒ MACHINED ☐ SHOT BLASTED ☒ CLEAN BARE METAL  
SURFACE TEMPERATURE ☐ < -4°C/ 20°F ☐ -4°C/ 20°F TO 10°C/50°F ☒ 10°C/50°F TO 52°C/125°F ☐ > 52°C/125°F  
RESULTS- ☐ METRIC ☐ IMPERIAL

COMMENTS	ACCEPT	REJECT
1 5x Stud w.o ID 103531	✓	
2 12x Stud w.o ID 103882	✓	
3 10x Stud w.o ID 105447	✓	
4 11x Stud w.o ID 105606	✓	
5 13x Stud w.o ID 105607	✓	
6 12x Stud w.o ID 105609	✓	
7 Aft cross tube w.o ID 108703	✓	
8 Aft cross tube w.o ID 108704	✓	
No Relevant Indication was detected as per applicable standard at the time of inspection.		
M/12/13 11:08		

## Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## SIGNATURES

CLIENT REPRESENTATIVE Andy Sheldon PRINT ASheldon SIGNATURE  
TECHNICIAN (SIGNATURE): Alexandre Michon SIGNATURE  
NAME (PRINT): Alexandre Michon 1<sup>st</sup> TECHNICIAN  
CGSB LEVEL 2 SNT LEVEL 2 CGSB REG. NO. 10142  
2<sup>nd</sup> TECHNICIAN  
CGSB LEVEL \_\_\_\_\_ SNT LEVEL \_\_\_\_\_ CGSB REG. NO. \_\_\_\_\_  
DTR # E-07754  
REPORT REVIEWED BY: \_\_\_\_\_ NAME \_\_\_\_\_ INITIALS \_\_\_\_\_

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